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covered by the Saluda quadrangle in the mountains of North and South Carolina, and some preliminary work looking to the future mapping of the important region about Charlotte, N. C., has been undertaken. On the coast the Hertford quadrangle, on the Albemarle Sound, has been completed, and two areas of great historic importance in tide-water Virginia, covering the region about Yorktown, Jamestown, and Williamsburg, have been mapped. This work will be of great interest in connection with the proposed Jamestown Exposition.

In Wisconsin quite an area of mapping has been completed, in much detail, about the capital city of Madison, and in the neighbourhood of Evansville, and the revision preliminary to a careful study of glacial action in southern Wisconsin has been made of the old Geneva and Silver Lake quadrangles. In North Dakota, Windemere quadrangle, covering the area between that city and Hankinson, has been completed. In Arkansas the country about Harrison, in the northern part of the State, has been mapped.

Another area of great economic importance, and one which will prove of much interest to mining engineers and economic geologists is the region covered by the Farmington and Potosi quadrangle in Missouri, the mapping of which has just been completed. In addition to the lead interests of this region a large amount of baryte is mined. The country is highly eroded, yet densely covered with a scrub growth of timber, which has rendered the work of the surveyors most difficult.

W.

GEOGRAPHICAL RECORD.

AFRICA.

STUDYING THE CONGO NATIVES.—The *Bulletin* of the Royal Belgian Geographical Society has begun the publication of a series of ethnographical studies of the native population of the Congo Free State. The work has been incited by the fact that there is every prospect of considerable transformation in the customs of the natives through contact with the white races, and it is desired to record their ways of life and traditions while the opportunity still presents itself. The opening paper (Nos. 3 and 4, 1904), by Dr. Védý, deals with the A-Babuas, who live in the forested region which has the Welle River for its northern and the Bomokandi for its eastern border—a people of fine physique, who live on the

products of the chase and fisheries, and to some extent on human flesh, together with a few fruits of the plantations which they make by clearing away the timber. Their rivers are especially rich in fish, their land is very fertile, and these advantages have attracted the attention of the Arabs and native tribes to the north of them, who have not been able, however, to take possession of the country, as the dense forest makes it a difficult region to enter, and the A-Babaas, though not numerous, stoutly defend their home.

AN ARCHÆOLOGICAL JOURNEY TO THE SIVA OASIS.—Prof. Dr. George Steindorff describes (*Pet. Mitt.*, Vol. 50, No. 8) the journey which he, with Baron von Grunau, made from Cairo through the Libyan desert to the small Siva oasis and back, in Nov., 1899–Jan., 1900. The purpose was to make archæological researches in this oasis, famous in ancient times for the shrine of the Oracle of Jupiter Ammon, which was visited by Alexander the Great, Hannibal, Cato the Younger, and other distinguished men. The explorers remained in the oasis and its neighbourhood only 21 days. Most earlier white visitors had been inhospitably received, but these gentlemen were courteously treated by the influential sheik and the people, who, however, did nothing to forward the scientific purpose of the expedition; and as few labourers could be hired to make excavations, most of the proposed work was left undone.

The oasis was more extensive in ancient times, but in the course of centuries some sources of water have been exhausted, and the area of vegetation has diminished. Dr. Steindorff found at the village of Aghurmi, one of the chief centres of population, a temple still well preserved, which he believes, from its inscriptions and Egyptian reliefs, to have been built by a King of Egypt about four centuries before the Christian era. He adds that there can scarcely be any doubt, from a comparison of the classical sketches of the Oracle-Temple of Jupiter Ammon, with the position and appearance of Aghurmi crowning the top of a small mountain, that this is the holy city in which Alexander the Great was greeted by the priests as the Son of God. The inhabitants, of yellow, North African, Berber stock, are easily distinguishable from the Arab Bedouins and the negroes. The men speak both their Berber dialect and Arabic, particularly with the Bedouins, whose caravans come to Siva both from the east and west. An extended description of the journey and of its archæological results will be printed later.

THE CAPE TO CAIRO RAILROAD.—The London *Times* (weekly, Oct. 14) says that engineers are hard at work at the cantilever

bridge which is to span the Zambezi River at Victoria Falls. The bridge work is ready, and is being shipped to the Zambezi in sections. Sir Charles Metcalfe, who is superintending the extension of the railroad northward through Barotse Land, says that inducements are being offered to colonists to settle in the country now tapped by the completed part of the line. Land is being surveyed which will be given out in free grants of 160 acres each to *bona fide* settlers. Plots are being reserved along the line between Bulawayo and Salisbury. No piece of land will be more than three miles from the railroad. This scheme will be carried out up to the Zambezi and beyond it as the railroad progresses. Major A. St. H. Gibbons says there are large areas adapted for white settlement on the plateau of Barotse Land, through which the railroad is to be built.

COLONIAL WORK IN GERMAN EAST AFRICA.—Mr. Franz Eiffé says, in the *Deutsch-Ostafrikanische Zeitung* (July, 1904), that the development along the Tanga railroad leading up into the mountain region behind the coast is remarkable. The small planters are succeeding, and their cocoa palms, rice, maize, and cotton fields are in a very promising condition. The colonists are raising the larger part of the food they need. Their success with rice and maize has been phenomenal, and when the rich lands a little farther inland have railroad transportation there will be a surplus of food for export. On the other hand, the large planters who invested heavily in coffee and tobacco fields, without the necessary experience, are losers, and their plantations are not paying the interest on the money spent on them. The Biological and Agricultural Institute at Amani is experimenting with all kinds of plants, soils, and fertilizers, studying harmful plants, insects, etc., and distributing information, and especially the results of experience, that may be helpful to the colonists.

AMERICA.

THE RUBBER DISTRICTS OF EASTERN BOLIVIA.—Captain L. Jerrmann has an interesting description in *Petermanns Mitteilungen* (Vol. 50, No. 8) of his journey to the rubber district in the little-known region of eastern Bolivia to the south of the Guaporé River. This region is thinly peopled and seldom visited, and cartographers treat it in a very cursory manner or leave it white on the maps. Captain Jerrmann visited the only Bolivian port, Puerto Suarez, on a shallow offset of the Paraguay River. European and other foreign goods are brought by steamboat from Buenos Aires to Corumbá, Brazil, and forwarded in small boats to Puerto Suarez,

about 10 miles west, whence they are carted over 400 miles west to Santa Cruz, on the upper waters of the Piray affluent of the Rio Grande. This wagon road, like some others in Bolivia, is built better and kept in better condition than most of the common roads of South America.

The rubber district, which is south and west of the Guaporé River, is scattered in comparatively small areas through the dense forest. The tree is the *Hevea Braziliensis*, the same plant that yields Pará rubber along the Amazon. The methods of collecting and treating the crude rubber are the same as those used in the Pará trade.

ASIA.

EFFECTS OF FOREIGN COMMERCE IN JAPAN.—Mr. Yukimasa Hattori, in his monograph on "The Foreign Commerce of Japan since the Restoration, 1869-1900" (Johns Hopkins Univ. Studies. Series XXII, Nos. 9-10), says that the growth of foreign commerce has had vast effect on every phase of political, social, and individual life in Japan. Foreign trade has increased the varieties of goods, improved the quality, and cheapened prices. Before rice was imported a sudden rise or fall in its price, which occurred with every change in the season's prospects, was greatly to the detriment of the labouring classes. Importations of foreign rice are now a regulator of prices. There is no longer fear of rice famines. Among the new commodities that foreign trade has brought are spices from India, sugar from Hongkong and the Philippines, coffee from South America, and the fruit, wine, and metals of many countries.

EUROPE.

THREE RAILROADS ACROSS THE PYRENEES.—Railroad connections between France and Spain are now limited to two lines which skirt the shores of the Bay of Biscay and the Mediterranean, passing around the extreme ends of the mountains. The *Geographische Zeitschrift* (No. 9, 1904) says that an agreement between the French and Spanish Governments has been signed in Paris under which it is stipulated that they shall jointly extend three railroad lines across the Pyrenees within ten years. The most westward line, starting from Oloron, in France, will cross the mountains over the Canfranc Pass to Jaca, in Spain; the middle route will join St. Giron with Lerida over the Salau Pass; the eastern line will unite the town of Aix-les-Thermes with Ripoll over the Puigcerda. It is said that the time of the journey between Toulouse and Barcelona

will be shortened by three hours by the building of one of these roads. Work will be simultaneously in progress on all the lines. The agreement will not be in effect until it is ratified by the Parliaments of both States.

THE LILLE GEOGRAPHICAL SOCIETY.—This Society, founded in 1880, has 2,248 members, including its sections in the neighbouring towns of Roubaix and Tourcoing. This is a large number in proportion to the population from which the membership is drawn. Various expedients are adopted to make the Society useful to the members. Excursions under the management of the Society have become very popular. Last year's programme comprised twenty-three excursions, some of them extending into Spain, Holland, Switzerland, and the Vosges. Over 900 members took part in these instructive journeys, which involved only moderate expense. The Society also stimulates local interest in geographical study by lecture courses and by offering prizes to students in the public schools for the best descriptions of geographical areas selected for their study. The monthly *Bulletin* is filled with information, and the energetic measures taken to add to the Society's influence and membership appear to be meeting with noteworthy success.

DEVELOPMENT AND POSITION OF MAP-MAKING IN EUROPE OUTSIDE OF GERMANY.—Captain W. Stavenhagen, an authority on topography in the military service of Germany, has prepared a "Skizze der Entwicklung und des Standes des Kartenwesens der ausserdeutschen Europas." It appears as *Ergänzungsheft* No. 148 to *Petermanns Mitteilungen* (Justus Perthes, Gotha). The task that the author assumed covers a very large field, and has involved enormous labour. Although he excludes the cartography of the German Empire from the present volume, desiring to give it separate treatment, the influence of the great German map-makers upon the cartographic development of most of the other nations of Europe has been so important that he necessarily makes many allusions to them.

In the introductory chapter he discusses the influence of cartography upon geographic study, and describes the broad groups into which maps may be divided—(1) Geographic or general maps, which are rarely compiled from original sources, but are reduced from maps of larger scale; and (2) topographic or special maps on a comparatively large scale, reduced from original surveys. In these two large groups the author finds a considerable number of subdivisions, and describes the classes of maps in each of these departments.

He then sketches the history of cartographic development in Europe as a whole, and appends a list of the most important maps and atlases of the present day relating to Europe, including the work of Governments and private publishers. The list might well have been extended to include a few more of the best specimens of British atlas-making.

The ancient, middle, and modern periods of map-making in each country are then described, with their most conspicuous products; and a summary view is given of the part taken by each map-making nation in the history of cartography. The reader is informed of the kind of maps each nation produces, of their styles of production, and something of their cartographic peculiarities. Some idea is given as to the clearness, accuracy, good taste, and price of many of these products. The volume includes a bibliography of the literature relating to cartography in all European countries.

This work, of 376 large pages, covers a field of great importance, which in its whole compass has not in recent times been adequately investigated. It is, therefore, a most timely and valuable addition to our means of studying the history and the outcome of cartography. It is to be hoped that Captain Stavenhagen will extend his studies to all the other map-producing parts of the world, according to his original plan.

POLAR.

ELLESMERE LAND.—The land-mass separated from Greenland by Smith Sound, Kane Basin, and Kennedy and Robeson Channels, having been proved by Peary and Sverdrup to be one island instead of two or more, is to bear the name Ellesmere Land, if the decision of the Geographic Board of Canada prevails. Different parts of this land (from S. to N.) have to this time borne the names North Lincoln, Ellesmere Land, Grinnell Land, and Grant Land. In naming the whole Ellesmere Land the Canadian Board acts upon the idea that British sovereignty extends over the entire Arctic archipelago north of our continent. Whether or not the suggested name is approved, the names Grinnell Land and Grant Land, given by United States explorers, will doubtless be retained to designate the northern parts of the island.

GENERAL.

BIBLIOGRAPHIE GÉOGRAPHIQUE ANNUELLE OF THE ANNALES DE GÉOGRAPHIE.—The thirteenth volume of this very useful publication covers the chief features of the geographical literature of 1903. It includes 997 items, many relating to books and many others to

articles and maps in the geographical periodicals. The paragraphs under each title, written by one or another of the 54 geographical specialists who assisted Professor Louis Raveneau in the preparation of the volume, are often illuminative as to the purpose, the essence, and achievement of the works under review. The contents are arranged by authors alphabetically under general and sub-heads, making it very easy to turn to any particular work and the department of geography in which each is treated. The annual appearance of this work is always awaited with interest, because it is not only a most adequate and useful record of a year's geographical literature, but a critical summary of the literary output which it records and classifies. The *Bibliographie* has now adopted the system of abbreviations employed in the *Bibliotheca Geographica*. The diversity of abbreviations used to designate a large number of geographical publications is disappearing; and this is desirable, as it has been a source of considerable confusion.

MR. BAILEY WILLIS'S RETURN FROM ASIA.—Mr. Bailey Willis, of the U. S. Geological Survey, who in 1903 received a grant from the Carnegie Institute for geological explorations in eastern China, has recently returned home. His mission was to carry on a comparative study of the geology of eastern Asia and western North America by observations in stratigraphy, structure, and physiography in eastern China and Siberia, and by the collection of fossils, particularly with reference to the development of the Cambrian faunas.

DISTRIBUTION OF THE CINCHONA TREE.—Mr. J. Dronke, in his monograph on the transplanting of this plant from its native home in South America to Asia, gives some interesting facts concerning its present distribution. The habitat of the cinchona is between 10° N. and 22° S. latitude in the Andes and among the coastal mountains of Venezuela and Colombia. The upper limits of its range are, according to the species of the tree, from 800 to 3,000 metres. The first attempt to transplant it was in 1850, when it was taken to Algeria, with poor success. In 1854, Mr. Hasskarl, for the Dutch Government, introduced young trees and seeds into western Java. It was found to thrive finely in well-watered regions between 1,500 and 1,700 metres above the sea, and with an average temperature of about 17° (62° Fahr.). When it was discovered that *Cinchona Calisayæ* var. *Ledgeriana* supplied the most valuable medicinal product the cultivation was confined to this species.

The cinchona industry rapidly developed in Java, and that island

now far surpasses all other lands in the quantity of quinine produced. Eighty per cent. of the world's product comes from Java, and the plantations cover 20,000 acres. The tree was introduced into southern India in 1861; but though it thrives there it has in recent years been neglected, on account of the decreased price of cinchona bark, so that in 1899 the plantations covered only about 5,000 acres. It was taken into northern India along the southern slopes of the Himalayas, and in Sikkim, but its cultivation there has not been important. The production of cinchona bark in Ceylon steadily grew for twenty years after its introduction in 1861. In 1881 the island was one of the greatest sources of supply. In the following ten years, however, the production greatly declined, and fell from over 15,000,000 to 510,462 pounds. Other attempts to introduce the plant into Asia, Africa, and Australia have not met with success. Recent experiments with the cinchona tree in German East Africa have been discontinued.

ECONOMIC GEOGRAPHY NOTES.

GERMAN TRADE WITH SPAIN.—The German Consul at Barcelona recently published in the *Deutsche Industrie-Zeitung* a report showing an improvement in Spain's commercial position, and also illustrating a pretty phase of international commercial relations. Germany is selling large quantities of partly-finished goods, raw materials, and machinery to Spain. Spain completes the manufacture and sells the goods to Latin America. Spain's trade with the latter is increasing, which growth reacts on Germany, increasing her trade with Spain. Another possible result in the reaction, however, is not noted. As Spain's sales to the Western countries increase, Germany's to the same countries may decrease.

The same Consul is quoted in the U. S. Consular Report for August concerning Spain's economic condition. Recovery from the effects of the Spanish-American war was aided by the stimulated markets in her lost but better-governed colonies, and by the return of many capitalists to Spain, thus giving a new impetus to trade and internal enterprise. The loss of her colonies induced her to attend to home improvement and study her colonial and international relations.

Our Department of Commerce and Labor Report for 1903, and the Bureau of Foreign Commerce for previous years, give the following figures for Spain's total foreign commerce: In 1901, 335 million dollars; in 1902, 342 millions, and in 1903, 338 millions, which shows very little change; but the truth is better told by

comparing the exports and imports. In 1901 the excess of imports over exports was 29½ millions, in 1902 it was 13½ millions, and in 1903 they were still more closely balanced. Really, then, what is happening is an actual decrease in Spain's imports and an increase in her exports. Agriculture and mining must remain her chief occupations, and the revival in both fields is accountable for the above facts.

G. D. H.

MACHINES FOR THE TROPICS.—One of the ways in which industry responds to geographic conditions is in the adaptation of its machines. Wheat harvesters in Southern California, Dakota, and Northern Illinois vary greatly. But when a whole zone of latitude intervenes between two regions the variance is even more marked, because the agricultural products are essentially all different. According to U. S. Consul Langer, in his report for August, 1904, Germany is putting forth great effort in the devising and making of machines for cultivating, harvesting, and preparing for export the crops of tropical countries. Among those which her ingenuity has designed are a machine for splitting cocoanuts, to get the meat for copra; one for preparing the palm fruit and for extracting the oil, and one for manufacturing caoutchouc from the sap of the rubber tree. Germany is also credited with several devices for tropical railroads, harbours, draining plants, cultivators, and with methods for building houses adapted to the tropics.

G. D. H.

FISHERIES OF JAPAN.—H. M. Smith, of the U. S. Bureau of Fisheries, has prepared an article on the above subject, which appears in the September number of the *National Geographic Magazine*, and which brings out many interesting facts concerning the geographic relations of this great industry. He says Japan is the leading fishing nation to-day, although the value of her sea products is surpassed by that of two other countries. The United States, outside of Alaska, and Great Britain each produce about \$45,000,000 worth annually, and Japan produces about \$30,000,000 worth. Japan leads in the proportion of the total population engaged in the fishing industry, in the actual number of people living by the industry, in the relative importance of fish products in the country's domestic economy, in the skill and ingenuity of the people in making appliances for fishing and for preparing the products, in the extent to which all water products are utilized, and in the support given by the Government to the industry. Geographic factors potent in the development of the fisheries are: Abundance of most

useful sea products; great extent of the empire both in latitude and longitude, giving wonderful variety of water life; the island nature of the country and the length of the coast-line, and consequently the ease with which all can come under the influence of the sea and almost all receive, daily, fresh fish at their doors; certain national characteristics of the people, probably, in part, results of the influence of their environment; and, lastly, Government recognition of the importance of the industry shown by the steps taken to promote and protect the fisheries.

The principal differences between the fisheries of the United States and those of Japan are in the relative amount of the different species in the total output. Her chief fishes, in the order of importance, are herring, sardines, bonito, redsnapper, mackerel, and squid and cuttlefish. According to an article in the same magazine last May from a member of our Bureau of Fisheries, our chief fishes were salmon, shellfish, cod, herring, lake herring, and alewives.

One other important feature in the development of Japan's fisheries is the Imperial Fisheries Institute on Tokio Bay—a school for instruction in fishing, fish culture, and fisheries technology.

G. D. H.

THE ECONOMIC VALUE OF THE U. S. TOPOGRAPHIC MAPS.—The U. S. Geological Survey has recently published a small memorial volume telling of its work and growth during its just-completed first quarter-century. Among other things it points out some of the economic uses to which the topographic maps made by the Survey have been put. Of course, they are the bases for the various other branches of the Survey, and also for several other divisions and bureaux of the Federal scientific work; but they have been of inestimable value in other lines. They have greatly aided railway companies and highway bureaux in locating and building roads. This is especially marked in New York, Massachusetts, and Maryland. They have aided in investigations by cities for water and by canal companies for location, development, and improvement of artificial waterways. They have been of great value to irrigation and manufacturing companies in locating streams and reservoirs and in studying catchment basins and fall. They have been extensively used in opening up and expanding mineral workings, and in many engineering projects besides these mentioned; and last, but probably not least, through their use in the schools, they have been of great educational value. This last point means that there will be a larger, more intelligent use of the maps in the coming generation.

G. D. H.

FORESTS AND RAINFALL IN THE HAWAIIAN ISLANDS.—The question of the influence of forests upon rainfall is one which has long been of great interest, and any information upon the subject is always welcome. In Bulletin No. 48, Bureau of Forestry, *The Forests of the Hawaiian Islands*, by W. L. Hall, there are several notes on the climatic controls of the Hawaiian forests, and the relation of these forests to rainfall and water supply. There are two distinct kinds of forest in the islands—one occurring near sea-level, in the drier parts, and the other on the mountain slopes, where the rainfall is heavy. The former consists of a single species (*Prosopis Juliflora*), the mesquite of the southwestern United States, and introduced from that country. On Oahu, this forest extends in a narrow, almost continuous, belt along the south and west coasts, where it is protected from the northeast trade-winds, exposure to which it cannot endure, and on the other islands it occupies a similar position, reaching up the dry slopes to an altitude of several hundred feet. The trees of these forests furnish good wood for fuel; the pods are a valuable food for stock, and the trees have tremendous powers of reproduction. Hence they will inevitably be cared for by individuals, without any action on the part of the Government. While there are no records to support the opinion, Mr. Hall says that it is believed by some that the districts covered by these forests receive more local showers than formerly.

The second group of forests—the native trees—are distinctively of tropical character, and the best always occur where the rainfall is heaviest. The undergrowth is abundant; there is a great quantity of humus, and even in dry times enough water may be squeezed from a few handfuls of moss to give a good drink. The heaviest native forests are found on the windward mountain slopes, saturated by frequent rains during the greater part of the year, at elevations of 1,500 to 3,000 feet. The forests become thinner and poorer toward regions of lessened exposure to the trade-winds and decreased rainfall, and on leeward slopes, where the rainfall is in places less than 30 to 40 inches a year, there was originally no forest at all. The timber-line is 6,000–8,000 feet; the trees, being representatives of the torrid zone, find their limit at a comparatively low altitude in these islands, which lie at the edge of the tropics.

At present the crucial forest question on the Island of Hawaii is the wisdom of the removal of the native forests, where land is being cleared for the extension of cane fields up the slopes of the mountains, the danger being that as the trees are removed to give

place to the cane the water supply may be so seriously diminished as to make profitable sugar-cane-growing impossible. In this connection attention may be called to a statement (p. 22) concerning the effect of the trees in collecting the moisture already present in the atmosphere as cloud. A case very like this was described by Professor Abbe some years ago in the Island of Ascension, where the trees on Green Mountain collect the cloud particles, causing a steady drip to the ground, and thus furnishing a part of the water supply for the inhabitants at lower levels. Along similar lines come the suggestions which have been made regarding the collection of fog particles on the coast of California by means of mechanical contrivances built of wire, and so arranged that the drops collected on the wires shall be conducted to the roots of trees:

Throughout the Hawaiian Islands, but especially in these two districts (named below), the influence of the forest upon the amount and distribution of rainfall is a matter of common observation and experience. Back of the sugar plantations in Kohala and most of Hama Kua the land does not rise above an elevation of 3,000 feet, and, therefore, lacks the heavy rainfall which results from higher elevations. As the forests have occupied the land above the plantations, they, to a certain extent, have answered the purpose of the mountains in cooling the atmosphere and causing the saturated trade-winds to relinquish their moisture over the plantations. The evidence of this influence is convincing, and seems capable of demonstration, to some extent, by measurement. On the plains of Hama Kua and the lower northeast slope of Mauna Kea, where heavy fogs blow over from the ocean, and mists are of almost daily occurrence, the top of a single tree condenses enough moisture to make the ground beneath it muddy, or even to cause water to stand, while beyond the influence of the tree top the surface of the ground may be entirely dry. At Punohu, where the Parker ranch maintains a dairy, there is a short row of vigorous eucalypts about 100 feet high. These trees condense so much water that the ground beneath them is always muddy. The ranch has taken advantage of this unusual circumstance by placing beneath the tree tops a roof of sheet iron, which collects the water and runs it into a gutter, which leads it into a tank. The water thus collected is sufficient for a large number of stock.

It may here be noted, editorially, that the question whether trees really answer "the purpose of the mountains in cooling the atmosphere" may be considered an open one, although it is certain that trees can collect water particles already present in the air as fog or clouds. There can be no question that the reduction of the forest areas can easily cause a diminution of the flow of water for fluming, but that it has "decreased and made irregular the rainfall," the majority of those who have made a careful study of forest meteorology, although on the whole doubtless prejudiced in favour of the view, would probably hesitate to believe at once without the support of instrumental records. No one, however, will

deny that the forests which lie above the cane fields on the mountain slopes "possess so great a relative power that they distribute very evenly" a "tremendous quantity of water," nor that reckless deforestation will probably "make the water conditions so precarious as to reduce greatly the productiveness of the plantation, if not to ruin them entirely."

R. DEC. W.

NEW GUINEA NATIVES WHO CAN SCARCELY WALK.

The *Report* on British New Guinea for the year ending June 30, 1903, gives a brief account of the visit of Sir Francis P. Winter, Acting Administrator of the colony, to the Eastern Division. He improved this opportunity to enter a locality occupied by a small tribe called the Agaiambo, who are regarded with curiosity by their neighbours, owing to their preference for living in a series of swamps or shallow lakes, not far from the lower waters of the Barigi River. This tribe illustrates in a striking manner the influence of its environment upon physique. As they seldom venture upon dry land, but live in their huts and boats, the men have become almost incapacitated for walking. Here is what Sir Francis Winter says of them:

Emerging from the forest, we came out on a flat covered with reeds and rank grass, and after walking a couple of hundred yards through this, we arrived at the margin of an extensive sheet of shallow water, in which water lilies and other aquatic plants that do not rise above the surface of the water were growing. On the other side of this mere, and close to a bed of reed and flags, was a little village of the small Agaiambo tribe, and about three-quarters of a mile off was a second village. After much shouting our Barugi followers induced two men and a woman to come across to us from the nearer village. Each came in a small canoe, which, standing up in, they propelled with a long pole. One man and the woman ventured on shore to where we were standing.

The Agaiambo have, for a period that extends back beyond native tradition, lived in this swamp. At one time they were fairly numerous, but a few years ago some epidemic reduced them to about forty. They never leave their morass, and the Barugi assured us that they were not able to walk properly on hard ground, and that their feet soon bleed if they try to do so.

The man who came on shore was middle-aged. He would have been a fair-sized native, if his body from his hips downward had been proportionate to the upper part of his frame. He had a good chest and a thick neck, and his arms matched his trunk. His buttocks and thighs were disproportionately small, and his legs still more so. His feet were short and broad, and were very thin and flat, with weak-looking toes. This last feature was still more noticeable in the woman, whose toes were long and slight, and stood out rigidly from the foot, as though they possessed no joints. The feet of both the man and woman seemed to rest on the ground something as wooden feet would do.

The skin above the knees of the man was in loose folds, and the sinews and muscles